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EXAMINER
NGUYEN, DUSTIN

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2154	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	09/888,677	GANGADHARAN, SUSHILKUMAR
	Examiner	Art Unit	
	DUSTIN NGUYEN	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 February 2008</u>.

2a)☒ This action is **FINAL**.　　　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>2,6-9,16-34,37-42,44-53 and 56-62</u> is/are pending in the application.

　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>2,6-8,16-20 and 34</u> is/are allowed.

6)☒ Claim(s) <u>9,21-33,37-42,44-46,48,50-53 and 56-62</u> is/are rejected.

7)☒ Claim(s) <u>47 and 49</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　a)☐ All　b)☐ Some * c)☐ None of:

　　1.☐ Certified copies of the priority documents have been received.

　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　application from the International Bureau (PCT Rule 17.2(a)).

　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail. Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 2, 6-9, 16-34, 37-42, 44-53, 56-62 are presented for examination.

Allowable Subject Matter

2.   Claims 47 and 49 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

Response to Arguments

3.   Applicant's arguments filed 02/28/2008 and 12/28/2007 have been fully considered but

they are not persuasive.

4.   As per remarks, Applicants' argued that (1) Mankude and all other cited art have no

disclosure of Applicant's claimed means for apportioning the datagram into a plurality of

fragments.

5.   As to point (1), Mankude discloses packet fragment is produced during transmission of a

packet from one of clients 121-123 to interface node 103 and the structure of packet fragment [

Figure 3; and col 5, lines 45-63].

6.   As per remarks, Applicants' argued that (2) Mankude and all other cited art have no

disclosure of Applicants' claimed means for associating each fragment of the plurality of

fragments to the selected link on the basis of the Internet protocol (IP) identifier (ID).

7.   As to point (2), Mankude discloses a system that facilitates forwarding fragments of a

packet received from a source node to a destination node [Abstract]. The system of Mankude

includes a cluster of multiple server nodes that connect to each other through private interfaces [

i.e. aggregate links] [224, 225, Figure 2; and col 4, lines 53-63]. Mankude discloses the packet

received at the intermediate node is fragmented to the size of the MTU of the interface on which

the packet is going to be sent, then create a holder object for each packet that is in the process of

being forwarded to a server instance, and the holder object includes a packet ID, which uniquely

identifies the packet, and a fragment pointer, which points to a link list of packet fragments [

Figure 4; and col 6, lines 20-44]. In Mankude, the system uses the packet identifier (ID) to

identify the packet to which packet fragment belongs and links them into a holder object [i.e.

associating each fragment to an underlying link of the aggregate on the basis of the Internet

Protocol (IP) identifier (ID)] [Figure 4; col 5, lines 60-63; and col 6, lines 20-44]. In addition,

Mankude discloses separate holder object is created for each packet that is in the process of

being forwarded to a server instance at a destination node [i.e. active links] [col 6, lines 25-27

], and the system further determining if an entry exists for packet fragment, if an entry does not

exists, the system creates a holder object, if an entry does exists, the system links the fragment

into the holder object associated with the packet so that the fragment can be sent to the

destination node [i.e. associating the fragment with a link based on a number of active links] [

col 7, lines 2-16].

8.   As per remarks, Applicants' argued that (3) Mankude and all other cited art have no

disclosure of Applicant's claimed novel means for transmitting the plurality of fragments over its

associated link to transmit fragments of the data over the same associated link.

9.   As to point (3), Mankude discloses the fragment are linked into the entry for the packet

within the packet forwarding data structure, so that the fragment can be forwarded to the

destination node [Figure 4; Abstract; col 2, lines 17-56; and col 6, lines 19-58].

10.   As per remarks, Applicants' argued that (4) Mankude and all other cited art have no

disclosure of selecting one link of the plurality of links for transmitting a data to the network

node using a round robin selection technique.

11.   As to point (4), this claimed limitation is rejected as shown in claimed 21. Furthermore,

Lyle discloses transmitting using round robin selection technique [i.e. servicing data flow in

round-robin order] [col 6, lines 34-43; and col 11, lines 43-62].

Claim Objections

12.   Claims 21 are objected to because of the following informalities:

      I.   As per claim 9, it depends on cancelled claim 1, it should be corrected to depend on claim 6.

      II.   As per claim 21, 22, 28, 30, 32, 37, 56, 57, 58, "the plurality of links" should be corrected as "the plurality of network links".

      III.   As per claims 20, 21, missing a period at the end of the claims.

      IV.   As per claims 25, 26, 40, 41, "Previously Presented" should be corrected as "previously presented".

      V.   As per claim 39, "the method" should be corrected as "the system".

      VI.   As per claim 51, "the plurality of links" should be corrected as "the plurality of underlying links".

13.   Claims 2, 17, 19 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. As per claims 2, 17, 19 and 20, they are claiming limitations that are not further limit the subject matter of a previous claim [i.e. claims 2 and 17 are broader than claim 6 and 16; and claims 19 and 20 are included in claim 16].

      Appropriate correction is required.

Claim Rejections - 35 USC § 112

14.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

15.   Claims XXX are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

      A.   The following terms lack antecedent basis:

           I.   the plurality of links   -   claims 29, 44, 50, 52, 62

      B.   The claim language in the following claims is being considered as indefinite:

           I.   As per claims 21, 28, 29, 44, 50, 51, 56, 59, and 62, the claimed limitation

of "plurality of links as a connection", and the claimed limitation of "the

number of underlying links from the server as a connection" of claim 52,

are being considered as indefinite since the plurality of links are multiple

connections.

           II.   As per claims 21, the claimed limitation of "selecting one link of the

plurality of links for transmitting a datagram to the network node

(hereinafter the selected link) using a round robin selection technique, and

associating the datagram to a network link of the plurality of network links

according to a round robin policy based at least in part on the IP ID" is

being considered as indefinite because Applicant' specification discloses

implement round robin algorithm for the fragments, not datagram [600,

Figure 5; and specification, page 12, first paragraph].

III.   As per claims 24 and 39, the claimed limitation of "rotating the fragments

of each datagram among all the network links of the plurality of network

links to thereby ensure that all fragments having the same IP ID are

provided to the same network link" is being considered as indefinite since

rotating the fragments of each datagram among all the network links can

not ensure that all fragments having the same IP ID are provided to the

same network link.

Claim Rejections - 35 USC § 103

16.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person
having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

17.   Claims 2, 3,12, 13, 17, 18, 44-46, 50, 51 and 53 are rejected under U.S.C. 103(a) as being

unpatentable over Mankude et al. [US Patent No 6,795,866], in view of Lyles et al. [US Patent

No 6,563,829].

18.   As per claim 21, Mankude discloses the invention as claimed including a method for

distributing data over a plurality of network links within a computer network [i.e. forwards the

packets to various nodes within clustered computing system based upon load balancing policies

and other considerations] [col 4, lines 10-19 and lines 50-53], comprising:

provided the plurality of links as a connection to a network node [i.e. interface] [215,

224, 225, 226, 228, Figure 2; and col 4, lines 53-col 5, lines 9];

selecting one link of the plurality of links for transmitting a datagram to the network node

(hereinafter the selected link) [i.e. forward through interface 224, 225] [col 4, lines 53-63], the

data identified by an Internet Protocol (IP) identifier (ID) [i.e. the packet includes an identifier

(ID) for an Internet Protocol (IP)] [Abstract; col 2, lines 57-62], the IP ID indicating an end

point destination for the data [col 2, lines 16-56];

apportioning the datagram into at least one fragment [i.e. divide packet into fragments

for transmission] [Figure 3; and col 1, lines 54-56];

associating each fragment to the selected link on the basis of the IP ID [i.e. the system

uses a packet identifier from the fragment to look up an entry for the packet within a packet

forwarding data structure] [Abstract; col 2, lines 11-27 and lines 57-63]; and

transmitting the fragment over its associated link to transmit fragments of the data over

the same associated link [i.e. forwards the fragments to destination nodes] [Abstract; col 4,

lines 48-53; and col 5, lines 40-45] [Figure 5; and col 6, lines 64-col 7, lines 26]

Mankude does not specifically disclose

selecting one link of the plurality of links for transmitting a datagram to the network node

(hereinafter the selected link) using a round robin selection technique; and

associating the datagram to a network link of the plurality of network links according to a

round robin policy based at least in part on the IP ID.

Lyle discloses

selecting one link of the plurality of links for transmitting a datagram to the network node

(hereinafter the selected link) using a round robin selection technique, and associating the

datagram to a network link of the plurality of network links according to a round robin policy

based at least in part on the IP ID [i.e. servicing data flow in round-robin order] [col 6, lines

34-43; and col 11, lines 43-62].

It would have been obvious to combine the teaching of Mankude and Lyles because

Lyles's teaching of round robin would allow to provide a fairly and dynamically allocating

transmission bandwidth in a shared-media packet-switch network [Lyles, Abstract; and col 1,

lines 15-18].

19.   As per claim 22, Lyles discloses a number of links in the plurality of links [i.e. links] [

col 9, lines 9-20].

20.   As per claim 9, Mankude discloses loading at least one data buffer of the server with the

at least one fragment; fetching the fragment from the data buffer; and loading at least one queue

of the server with the fragment, the queue associated with the underlying link [i.e. packet

fragments can queue up in holder object] [Figure 4; and col 6, lines 37-52].

21.   As per claim 27, it is rejected for similar reasons as stated above in claim 21.

Furthermore, Lyles discloses the operating system further configured to include a virtual

interface process [i.e. virtual circuits] [col 11, lines 51-55]. It would have been obvious to a

person skill in the art at the time the invention was made to combine the teaching of Mankude

and Lyles because Lyles's teaching of virtual circuit would allow to provide a fairly and

dynamically allocating transmission bandwidth in a shared-media packet-switch network [Lyles,

Abstract; and col 1, lines 15-18].

22.   As per claims 28 and 29, they are rejected for similar reasons as stated above in claim 21.

23.   As per claim 37, it is rejected for similar reasons as stated above in claim 22.

24.   As per claim 44, it is rejected for similar reasons as stated above in claim 21.

25.   As per claims 50-52, they are rejected for similar reasons as stated above in claim 44.

26.   As per claim 56, it is rejected for similar reasons as stated above in claim 21.

27.   As per claim 57, discloses obtaining a second data to transmit over the plurality of links,

and selecting by the round robin process a second link to transmit fragments of the second data

to the network node.

28.   As per claim 59, it is rejected for similar reasons as stated above in claim 21.

29.   As per claim 60, it is rejected for similar reasons as stated above in claim 57.

30.   As per claim 62, it is rejected for similar reasons as stated above in claim 21.

31.   Claims 23, 24, 38 and 39 are rejected under U.S.C. 103(a) as being unpatentable over

Mankude et al. [US Patent No 6,795,866], in view of Lyles et al. [US Patent No 6,563,829],

and further in view of Westberg [US Patent No 6,791,982].

32.   As per claim 2, Mankude does not specifically disclose wherein the step of associating

comprises the step of producing a result representing a remainder upon dividing the IP ID by the

number of active links. Westberg discloses wherein the step of associating comprises the step of

producing a result representing a remainder upon dividing the IP ID by the number of active

links [i.e. modulo] [col 8, lines 37-49]. It would have been obvious to a person skill in the art

at the time the invention was made to combine the teaching of Mankude and Westberg because

Westberg's teaching would allow for segmentation for transmission of large data packets to

increase the speed of transferring information.

33.   As per claim 23, Mankude and Lyles do not specifically disclose wherein the step of

associating comprises the step of producing a result representing a remainder upon dividing the

IP ID by the number of active links. Westberg discloses wherein the step of associating

comprises the step of producing a result representing a remainder upon dividing the IP ID by the

number of active links [i.e. modulo] [col 8, lines 37-49]. It would have been obvious to a

person skill in the art at the time the invention was made to combine the teaching of Mankude,

Lyles and Westberg because Westberg's teaching would allow for segmentation for transmission

of large data packets to increase the speed of transferring information.

34.   As per claim 24, Mankude discloses wherein the step of associating further comprises:

        rotating the fragments of each datagram among all the underlying links to thereby ensure

that all fragments having the same IP ID are provided to the same physical link of the aggregate [

i.e. ensure that packets originating from the same client are directed to the same server] [col 1,

lines 52-54; and col 4, lines 15-19].

        Mankude and Lyles do not specifically disclose

        calculating the IP ID of each datagram in a sequential manner.

        Westberg discloses

        calculating the IP ID of each datagram in a sequential manner [Figure 4; and col 8, lines

14-36].

        It would have been obvious to a person skill in the art at the time the invention was made

to combine the teaching of Mankude, Lyles and Westberg because Westberg's teaching of

sequential manner would allow receiving node to detect lost segments [Westberg, col 8, lines

31-33].

35.   As per claim 30, it is rejected for similar reasons as stated above in claim 21.

Furthermore, Mankude discloses transmitting all of the one ore more fragments associated with

the IP ID over the network link [i.e. ensure that packets belonging to the same TCP connection

or UDP instance are sent to the same service instance] [col 1, lines 52-54; and col 4, lines 15-19

]. Furthermore, Mankude does not specifically disclose each link of the plurality of links

assigned to the same MAC address of the network node. Westberg discloses each link of the

plurality of links assigned to the same MAC address of the network node [   ] [   ]. It would have

36.   As per claim 31, it is rejected for similar reasons as stated above in claim 21.

37.   As per claim 32, it is rejected for similar reasons as stated above in claims 21 and 30.

38.   As per claim 33, it is rejected for similar reasons as stated above in claim 21.

39.   As per claims 38 and 39, they are rejected for similar reasons as stated above in claims 23

and 24.

40.   As per claim 42, Mankude discloses wherein the steps of transmitting are performed in

parallel [   ] [   ].

41.   As per claim 53, it is rejected for similar reasons as stated above in claim 24.

42.   As per claim 58, Westberg discloses directing each link of the plurality of links to a

common media access address (MAC address) [   ] [   ].

43.   As per claim 61, it is rejected for similar reasons as stated above in claim 58.

44.   Claims 25, 26 and 40 are rejected under U.S.C. 103(a) as being unpatentable over

Mankude et al. [US Patent No 6,795,866], in view of Lyles et al. [US Patent No 6,563,829],

and further in view of Narad et al. [US Patent No 6,157,955].

45.   As per claim 25, Mankude and Lyles do not specifically disclose wherein the step of

associating comprising:

        logically combining the IP ID with a predetermined mask to produce a quantity;

        right shifting the quantity a predetermined number of places to create a Previously

Presented quantity; and

        establishing a threshold at which a group of data is forwarded to each underlying link of

the aggregate.

        Narad discloses wherein the step of associating comprises:

        logically combining the IP ID with a predetermined mask to produce a quantity (Col. 37,

lines 2-6; Col. 91, lines 51-56);

        right shifting the quantity a predetermined number of places to create a Previously

Presented quantity (Col. 42, lines 42-48); and

        establishing a threshold at which a group of data is forwarded to each underlying link of

the aggregate (Col. 6, lines 56-62; Col. 8, lines 21-29).

It would have been obvious to one of ordinary skill in the art at the time of invention was

made to combine the teaching of Mankude, Lyles and Narad because they both deal with

processing data in-order to transmit information through a network of communication links.

Furthermore, the teaching of Narad to combine the IP ID with a predetermined mask, then to

right shift the combined value a predetermined number of places while establishing a threshold at

which a group of data is forwarded to each underlying link accelerates the association of a

datagram and increases efficiency with the systems Mankude and McCullough disclosed.

46.   As per claim 40, it is rejected for similar reasons as stated above in claim 25.

47.   As per claim 46, it is rejected for similar reasons as stated above in claim 25.

48.   Claim 41 is rejected under U.S.C. 103(a) as being unpatentable over Mankude et al. [US

Patent No 6,795,866], in view of Lyles et al. [US Patent No 6,563,829], and further in view of

Narad et al. [US Patent No 6,157,955] and Westberg [US Patent No 6,791,982].

49.   As per claim 26, it is rejected for similar reasons as disclosed above in claims 2 and 21.

50.   As per claim 41, Mankude, Lyles and Narad do not specifically disclose wherein the step

of associating comprises the step of producing a result representing a remainder upon dividing

the IP ID by the number of active links. Westberg discloses wherein the step of associating

comprises the step of producing a result representing a remainder upon dividing the IP ID by the

number of active links [i.e. modulo] [col 8, lines 37-49]. It would have been obvious to a

person skill in the art at the time the invention was made to combine the teaching of Mankude,

Lyles, Narad and Westberg because Westberg's teaching would allow for segmentation for

transmission of large data packets to increase the speed of transferring information.

51.   As per claim 45, it is rejected for similar reasons as stated above in claim 41.

52.   As per claim 48, it is rejected for similar reasons as stated above in claims 25 and 41.

53.   THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

      A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dustin Nguyen whose telephone number is 571-272-3971. The

examiner can normally be reached on Monday - Friday 8:30 a.m. - 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-3970.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Dustin Nguyen/
Primary Examiner, Art Unit 2154